## Amendments to the Claims:

Please amend Claims 1 to 3, 5, 7, 19 to 21, 23 and 25, as shown below. This listing of claims replaces all prior versions, and listings, of claims in the application.

## Listing of Claims:

1. (Currently Amended) An antenna array system, comprising:

a plurality of antenna elements organized in an array and configured to form a non-planar shaped antenna array surface; and

switching circuitry configured to switch each of the plurality of antenna elements on or off based on control signals;

wherein the antenna beam direction ~~can be steered~~ is steered in a first direction by switching on a first set of antenna elements, and wherein the antenna beam direction ~~can be steered~~ is steered in a second direction by switching on a second set of antenna elements.

2. (Currently Amended) The antenna array system as recited in claim 1, wherein the antenna beam direction ~~can be steered~~ is steered in a plurality of directions by switching on a set of antenna elements for each of the plurality of directions.

3. (Currently Amended) The antenna array system as recited in claim 1, wherein the ~~horn elements~~ antenna elements are selected from the group consisting of cylindrical horn antenna

elements, conical horn antenna elements, step-cylinder horn antenna elements, dipole antenna elements, helical antenna elements and slot antenna elements.

4. (Original) The antenna array system as recited in claim 1, wherein the antenna elements are symmetrically located within the antenna array.

5. (Currently Amended) The antenna array system as recited in claim 1, wherein the antenna elements are evenly spaced within the antenna array.

6. (Original) The antenna array system as recited in claim 1, wherein the antenna elements are the same size.

7. (Currently Amended) The antenna array system as recited in claim 1, wherein the non-planar shaped antenna array surface comprises a non-planar shape selected from the group consisting of a spherical convex shape, a spherical concave shape, a parabolic convex shape, a parabolic concave shape, an ellipsoidal convex shape, an ellipsoidal concave shape, a saddle shape, ~~or an~~ and an airfoil shape.

8. (Original) The antenna array system as recited in claim 1, wherein the antenna array is a transmit antenna array, a receive antenna array, or a transmit and receive antenna array.

9. (Original) The antenna array system as recited in claim 1, wherein the antenna array comprises M-number of antenna elements, and wherein the switching circuitry is configured to

control N-number of the M-number of antenna elements at a given time, the switching circuit comprising:

a signal splitter adapted to split a signal into N-number of signals;

a switching matrix comprising NxM-number of switches; and

switch control circuitry adapted to control the switching matrix so that a specified set of the N-number of the M-number of antenna elements are switched on.

10. (Original) The antenna array system as recited in claim 9, wherein the switching matrix comprises MEMS switches.

11. (Original) The antenna array system as recited in claim 9, wherein the switching circuit further comprises a signal amplifier adapted to amplify the signal prior to the signal entering the signal splitter.

12. (Original) The antenna array system as recited in claim 9, wherein the switching circuit further comprises a filter/diplexer adapted to separate transmit and receive signals to/from the antenna array.

13. (Original) The antenna array system as recited in claim 1, wherein the antenna array system is adapted for use on ground stations, air vehicles, water vehicles, ground vehicles or space vehicles.

14. (Original) The antenna array system as recited in claim 1, wherein the antenna array comprises a hexagonal array of antenna elements.

15. (Original) The antenna array system as recited in claim 14, wherein the hexagonal array comprises a plurality of hexagonal antenna element clusters abutted together to form the hexagonal array, each hexagonal antenna element cluster comprising X-number of antenna elements configured in a hexagonal arrangement.

16. (Original) The antenna array system as recited in claim 15, wherein the antenna array comprises N-number of the hexagonal antenna element clusters, and wherein the switching circuitry is configured to control X-number of antenna elements at a given time, the switching circuit comprising:

a signal splitter adapted to split a signal into X-number of signals;

a switching matrix comprising X-number of 1xN switches; and

switch control circuitry adapted to control the switching matrix so that a contiguous set of the X-number of the antenna elements are enabled.

17. (Original) The antenna array system as recited in claim 16, wherein the 1xN switches comprise multiplexers.

18. (Original) The antenna array system as recited in claim 16, wherein the antenna array comprises a total of M-number of antenna elements, and wherein the 1xN switches comprise M-number of on/off switches.

19. (Currently Amended) A spacecraft, comprising:

an antenna array system, comprising:

a plurality of antenna elements organized in an array and configured to form a non-planar shaped antenna array surface; and

switching circuitry configured to switch each of the plurality of antenna elements on or off based on control signals;

wherein the antenna beam direction ~~can be steered~~ is steered in a first direction by switching on a first set of antenna elements, and wherein the antenna beam direction ~~can be steered~~ is steered in a second direction by switching on a second set of antenna elements.

20. (Currently Amended) The spacecraft as recited in claim 19, wherein the antenna beam direction ~~can be steered~~ is steered in a plurality of directions by switching on a set of antenna elements for each of the plurality of directions.

21. (Currently Amended) The spacecraft as recited in claim 19, wherein the ~~horn elements~~ antenna elements are selected from the group consisting of cylindrical horn antenna elements, conical horn antenna elements, step-cylinder horn antenna elements, dipole antenna elements, helical antenna elements and slot antenna elements.

22. (Original) The spacecraft as recited in claim 19, wherein the antenna elements are symmetrically located within the antenna array.

23. (Currently Amended) The spacecraft as recited in claim 19, wherein the antenna elements are evenly spaced within the antenna array.

24. (Original) The spacecraft as recited in claim 19, wherein the antenna elements are the same size.

25. (Currently Amended) The spacecraft as recited in claim 19, wherein the non-planar shaped antenna array surface comprises a non-planar shape selected from the group consisting of a spherical convex shape, a spherical concave shape, a parabolic convex shape, a parabolic concave shape, an ellipsoidal convex shape, an ellipsoidal concave shape, a saddle shape, ~~or an~~ and an airfoil shape.

26. (Original) The spacecraft as recited in claim 19, wherein the antenna array is a transmit antenna array, a receive antenna array, or a transmit and receive antenna array.

27. (Original) The spacecraft as recited in claim 19, wherein the antenna array comprises M-number of antenna elements, and wherein the switching circuitry is configured to control N-number of the M-number of antenna elements at a given time, the switching circuit comprising:

a signal splitter adapted to split a signal into N-number of signals;

a switching matrix comprising NxM-number of switches; and

switch control circuitry adapted to control the switching matrix so that a specified set of the N-number of the M-number of antenna elements are switched on.

28. (Original) The spacecraft as recited in claim 27, wherein the switching matrix comprises MEMS switches.

29. (Original) The spacecraft as recited in claim 27, wherein the switching circuit further comprises a signal amplifier.

30. (Original) The spacecraft as recited in claim 27; wherein the switching circuit further comprises a filter/diplexer adapted to separate transmit and receive signals to/from the antenna array.

31. (Original) The spacecraft as recited in claim 19, wherein the antenna array comprises a hexagonal array of antenna elements.

32. (Original) The spacecraft as recited in claim 31, wherein the hexagonal array comprises a plurality of hexagonal antenna element clusters abutted together to form the hexagonal array, each hexagonal antenna element cluster comprising X-number of antenna elements configured in a hexagonal arrangement.

33. (Original) The spacecraft as recited in claim 32, wherein the antenna array comprises N-number of the hexagonal antenna element clusters, and wherein the switching circuitry is configured to control X-number of antenna elements at a given time, the switching circuit comprising:

a signal splitter adapted to split a signal into X-number of signals;

a switching matrix comprising X-number of 1xN switches; and

switch control circuitry adapted to control the switching matrix so that a contiguous set of the X-number of the antenna elements are enabled.

34. (Original) The spacecraft as recited in claim 33, wherein the 1xN switches comprise multiplexers.

35. (Original) The spacecraft as recited in claim 33, wherein the antenna array comprises a total of M-number of antenna elements, and wherein the 1xN switches comprise M-number of on/off switches.